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Bibliography

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[Judge] Fukazawa Right mind

(56) [Bibliography]

[References] Provisional publication of a patent Common [1-260772 (JP, A)]

[References] Provisional publication of a patent Common [3-15180 (JP, A)]

[References] The real open Common [2-117682 (JP, U)]

(58) [The investigated field] (Int.Cl.6, DB name)

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CLAIMS

(57) [Utility model registration claim]

[Claim 1] Are an electrical connector for connecting the 1st circuit board of one sheet to the 2nd circuit board of at least one sheet, and mould fabrication is carried out from; elastic insulation material. It has the 1st field with which the 1st circuit board can be equipped, and the 2nd field in which the 2nd circuit board should be held. It is arranged in housing and the; aforementioned slot which have one slot even if few. the 2nd field -- the end face section of the 2nd circuit board -- it should hold -- ***** with a size -- Mould fabrication is carried out in one with the contact terminal and the; aforementioned housing which should connect the 2nd circuit board with the 1st electrically. Mould fabrication is carried out in one with the engagement member of a couple, and the; aforementioned housing at least. and it extends from the 2nd field of the above near the both ends of the aforementioned slot, it engages with the 2nd circuit board, and a predetermined posture is made to stop the 2nd circuit board -- And counter on both sides of the engagement member of the aforementioned couple, and it extends from the 2nd field of the above. Pinch the 2nd circuit board of the above from the edges on both sides, and even if few, mould fabrication is carried out in one with the latch member of a couple, and the;

aforementioned housing. And counter on both sides of the latch member of the aforementioned couple, and it projects from the 2nd field of the above. On both sides of the latch member of the aforementioned couple, counter the height material of a couple, and the 2nd field of the; aforementioned housing at least, and it is arranged. the latch of the aforementioned couple -- the latch of the aforementioned couple to the direction where the mutual interval of a member spreads -- a role of a stopper to a load with an excessive member is played -- The end which should carry out contact support of the one aforementioned latch member to which the each corresponds, Come to have opening which should be located between the other end which should be fixed to the aforementioned housing, and the aforementioned end and the other end, and should engage with the aforementioned height material, and in the case of wearing of the 2nd circuit board to the aforementioned slot the latch of the aforementioned couple -- the latch of the aforementioned couple to the direction where the mutual interval of a member spreads -- it has at least the specification-part material of a couple,; and the holddown member and; that regulate bending of a member elastically and that fix the aforementioned other end of the aforementioned specification-part material to the aforementioned housing the latch of the aforementioned couple -- the latch of the aforementioned couple to the direction where the mutual interval of a member spreads -- the electrical connector characterized by what bending of a member is elastically regulated by the specification-part material of a couple at first, and is stopped by the height material of a couple next

[Claim 2] the aforementioned specification-part material -- an elastic metal -- the electrical connector according to claim 1 which is a member

[Claim 3] The electrical connector according to claim 1 which is formed in the projected part of a couple, and the aforementioned other end of the aforementioned specification-part material at least, and consists of the engagement section which mould fabrication was carried out in one with the aforementioned housing, and the aforementioned holddown member countered on both sides of the height material of the aforementioned couple, and was projected from the 2nd field of the above, and which is engaged free [the attachment and detachment to the aforementioned projected part].

[Claim 4] It is the electrical connector according to claim 1 in which the aforementioned holddown member is the leg which should equip the 2nd field of the aforementioned housing with the aforementioned specification-part material, and this leg is formed in one with the aforementioned specification-part material.

[Claim 5] The electrical connector according to claim 1 which has a grasping member for the aforementioned latch member stir-frying this latch member manually.

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DETAILED DESCRIPTION

[Detailed explanation of a design]

[0001]

[Industrial Application] This design is related with the electrical connector for connecting a daughter board to a mother board electrically and mechanically.

[0002]

[Description of the Prior Art] For example, various electrical connectors for connecting electrically and mechanically the memory control board called a mother board (mother board) and daughter boards (daughter board), such as a single-in-line-memory module (SIMM), are well-known.

[0003] This kind of electrical connector is equipped with plastics nature housing with which a mother board is equipped, and this housing has the slot which accepts the end face of a daughter board. In the slot, the contact terminal to which a mother board and a daughter board are contacted electrically is arranged. In the both ends of a slot, the latch member for pinching a daughter board is arranged.

[0004] the daughter board inserted in the slot -- the latch of a couple -- it rotates to between members In the process, a latch member is pressed by the side edge of a daughter board, and is stir-fried elastically. Subsequently, if a daughter board reaches a predetermined posture, the latch member of a couple will return to an initial configuration elastically, and will pinch a daughter board. Thereby, a daughter board is stopped by the predetermined posture. Generally mould fabrication of such a latch member is carried out in one with housing.

[0005] The electrical connector indicated by U.S. JP,4,986,765,B has the metallicity latch member in alternative. box-like [by which mould fabrication of this metallicity latch member was carried out in / the both ends of housing / one] -- a member -- it is held by being inserted inside at housing

[0006]

[Problem(s) to be Solved by the Device] Since the quality of the material is flexible, it is easy to stir-fry a plastics nature latch member. This property is also the fault that the endurance over a load is inadequate, while attachment-and-detachment operation of a daughter board is the advantage of being easy. Therefore, if

attachment and detachment of a daughter board are repeated many times, it will originate in that a latch member bends exceeding an elastic-deformation limitation, and material fatigue, and will be hard coming to restore a latch member to an initial configuration. Consequently, the force which pinches a daughter board declines and it is easy to invite the defect of the electric contact to a daughter board and a contact terminal. Moreover, it may crocodile depending on the case, and a latch member may damage or fracture by the chip, crease, etc.

[0007] On the other hand, since the quality of the material is firm and the force strong against attachment-and-detachment operation of a daughter board is required although excelled in endurance, a metal latch member is inferior in operability.

[0008] Therefore, the purpose of this design is offering the electric socket which has the latch member excellent in endurance and operability.

[0009]

[Means for Solving the Problem] This design : Are an electrical connector for connecting the 1st circuit board of one sheet to the 2nd circuit board of at least one sheet, and mould fabrication is carried out from; elastic insulation material. It has the 1st field with which the 1st circuit board can be equipped, and the 2nd field in which the 2nd circuit board should be held. It is arranged in housing and the; aforementioned slot which have one slot even if few. the 2nd field — the end face section of the 2nd circuit board — it should hold — ***** with a size — Mould fabrication is carried out in one with the contact terminal and the; aforementioned housing which should connect the 2nd circuit board with the 1st electrically. Mould fabrication is carried out in one with the engagement member of a couple, and the; aforementioned housing at least. and it extends from the 2nd field of the above near the both ends of the aforementioned slot, it engages with the 2nd circuit board, and a predetermined posture is made to stop the 2nd circuit board — And counter on both sides of the engagement member of the aforementioned couple, and it extends from the 2nd field of the above. Pinch the 2nd circuit board of the above from the edges on both sides, and even if few, mould fabrication is carried out in one with the latch member of a couple, and the; aforementioned housing. And counter on both sides of the latch member of the aforementioned couple, and it projects from the 2nd field of the above. On both sides of the latch member of the aforementioned couple, counter the height material of a couple, and the 2nd field of the; aforementioned housing at least, and it is arranged. the latch of the aforementioned couple — the latch of the aforementioned couple to the direction where the mutual interval of a member spreads — a role of a stopper to a load with an excessive member is played — The end which should carry out contact support of the one aforementioned latch member to which the each corresponds, Come to have opening which should be located between the other end which should be fixed to the aforementioned housing, and the aforementioned end and the other end, and should engage with the aforementioned height material, and in the case of wearing of the

2nd circuit board to the aforementioned slot the latch of the aforementioned couple -- the latch of the aforementioned couple to the direction where the mutual interval of a member spreads -- bending of a member is regulated elastically -- at least -- the specification-part material of a couple, and; -- and the holddown member and; which fix the aforementioned other end of the aforementioned specification-part material to the aforementioned housing -- having -- **** -- the latch of the aforementioned couple -- the latch of the aforementioned couple to the direction where the mutual interval of a member spreads -- bending of a member It is elastically regulated by the specification-part material of a couple at first, and the above-mentioned purpose is attained by being characterized by what is stopped by the height material of a couple next.

[0010] the aforementioned specification-part material -- desirable -- an elastic metal -- it is a member

[0011] According to one example of this design, the aforementioned holddown member consists of the engagement section which mould fabrication was carried out in one with the aforementioned housing, and countered on both sides of the height material of the aforementioned couple, and was projected from the 2nd field of the above and which is engaged free [the attachment and detachment to the aforementioned projected part] by being formed in the projected part of a couple, and the aforementioned other end of the aforementioned specification-part material at least.

[0012] According to one example of this design, the aforementioned holddown member is the leg which should equip the 2nd field of the aforementioned housing with the aforementioned specification-part material, and this leg is formed in one with the aforementioned specification-part material.

[0013] As for the aforementioned latch member, it is desirable to have a grasping member for stir-frying this latch member manually.

[0014]

[Function] the role with which specification-part material reinforces a latch member according to the electrical connector of this design -- achieving -- a latch -- breakage of a member is prevented

[0015] Since mould fabrication is carried out from the insulating resin like housing, a latch member tends to stir-fry a latch member, and attachment-and-detachment operation of the 2nd circuit board is easy for it.

[0016]

[Example] If drawing 1 is referred to, the electrical connector 12 concerning this design assembles, and it is shown in the next state. This electrical connector 12 is a bilateral symmetry substantially, and only the right end portion is shown in drawing.

[0017] An electrical connector 12 connects a mother board (mother board) 1 to a daughter board (daughter board) 2 mechanically and electrically. A mother board 1 is for example, a memory control board. A daughter board 2 is the single-in-line-memory module (SIMM) equipped with the memory chip (not shown). A daughter

board 2 has opening 3 to the both ends of the cross direction. Two or more solder pads 5 are arranged by the end face section of a daughter board 2. Signs 2a and 2b show the front face of a daughter board 2, and a rear face, respectively.

[0018] A connector 12 has the long and slender housing 14 by which mould fabrication was carried out from elastic insulation material, for example, plastics. Let [the longitudinal direction of housing 14, and the cross direction of a daughter board 2] the direction of Y, and the height direction of housing 14 be Z directions for the direction of X, and the crossing direction of housing 14 in the following explanation.

[0019] The undersurface 16 of housing 14 is a field with which a mother board 1 should be equipped, and the upper surface 18 is a field where it should be equipped with a daughter board 2.

[0020] The foot 20 is formed in the direction both ends of X of the mother board wearing side 16 of housing 14. This foot 20 is inserted in a mother board 1, and a mother board 1 is equipped with a connector 12 by being fixed so that the electrical installation by soldering etc. may be possible.

[0021] The slot 22 is formed in the daughter board wearing side 18 of housing 14 along the direction of X. Two or more contact terminals 24 are arranged along the direction of X at the seriate at the slot 22.

[0022] A contact terminal 24 can be chosen from the well-known elastic-contact terminal for example, for SIMM as arbitration. For example, the contact terminal 24 of a cross-section configuration as shown in drawing 2 can be used. Such a contact terminal 24 is electrically connected to a mother board 1 by the arbitrary methods of inserting the end section 24a in through hole 1a of a mother board 1.

[0023] the both ends of the slot [in / the daughter board wearing side 18 / as shown especially in drawing 3 and drawing 4] 22 -- respectively -- engagement -- the member 26 has extended toward the upper part this engagement -- a member 26 -- post -- it consists of a boss 30 of 28 and its upper limit A boss 30 engages with the daughter board opening 5 from the rear face of a daughter board 2.

[0024] the daughter board wearing side 18 -- engagement of a couple -- a member 26 -- inserting -- the latch of the shape of a wall of a couple -- the member 32 has extended the latch of a couple -- a member 32 has the back face 34 which should support the daughter board side edge side 7 The support salient 36 which should support near the side edge of daughter board surface 2a is projected by the upper limit of this back face 34. such a latch -- a member 32 can deform in the direction of X elastically

[0025] these engagement -- a member 30 and a latch -- mould fabrication of the member 32 is carried out in one with housing 14

[0026] a latch -- in the initial configuration of a member 32, the interval between the back faces 34 of a couple is slightly made smaller than the direction width of face of X of a daughter board 2 so that a daughter board 2 can be elastically pinched from edges on both sides 7 moreover, a latch -- as for a member 32, it is desirable to have the handle 38 for canceling pinching of a daughter board 2

manually

[0027] the daughter board wearing side 18 -- the latch of a couple -- the attaching member 40 of a couple is projected on both sides of the member 32 An attaching member 40 is for attaching the below-mentioned reinforcement metal plate 50 in housing. Each attaching member 40 consists of rib-like height material 42 and a base-like engagement projected part 44.

[0028] As shown especially in drawing 5 , the reinforcement metal plates 50 are bending and the easy structure pierced, processed and formed about the elastic metal plate of one sheet. The reinforcement metal plate 50 is the cross section-like of J characters at the real target which consists of the monotonous section 54 and a flection 56. However, the point 58 of a flection 56 is bent by cross-section inverted-L-shaped. moreover, the upper limit 52 of the monotonous section 54 -- the edge -- a latch -- it is desirable to round off like illustration and to process it so that a member 32 may not be damaged The reinforcement metal plate 50 has the opening 60 continued and pierced at about 58 nose of cam of a flection 54 from the end face of the monotonous section 52.

[0029] It can tacking carry out of the reinforcement metal plate 50 to housing 14 by making the rib-like height material 42 insert in the opening 60 of the reinforcement metal plate 50 in the case of the assembly of an electrical connector 12. Therefore, the assembly work of an electrical connector 12 becomes easy. In the state where it carried out [tacking] of the reinforcement metal plate 50 to housing 14, the reinforcement metal plate 50 is fixable to housing 14 free [attachment and detachment] by making the U character-like point 58 of the reinforcement metal plate 50 engage with the engagement projected part 44 of an attaching member 40. in this case, it is shown in drawing 1 -- as -- the tooth back of the monotonous section 52 of the reinforcement metal plate 50, and a latch -- contacting the tooth back of a member 32 mutually -- the reinforcement metal plate 50 -- a latch -- a member 32 is made to support

[0030] a latch -- the time of extending a member 32 -- a latch -- too much bending of a member 32 regulates with the elasticity of the reinforcement metal plate 50 -- having -- a latch -- breakage of a member 32 is prevented

[0031] the reinforcement metal plate 50 -- only -- a latch -- the metallicity latch which regulates bending of a member 32 and was indicated by U.S. JP,4,986,765,B -- the pinching force is not added to a daughter board 2 like a member Therefore, the force required for attachment-and-detachment operation of a daughter board 2 is small, and ends.

[0032] moreover, the rib-like height material 42 -- a latch -- a role of a stopper to the excessive load which joins a member 32 is also played thereby -- a latch -- breakage prevention of a member 32 is further alike, and becomes certain

[0033] In case the above electrical connectors 12 are equipped with a daughter board 2, the end face of a daughter board 2 is inserted [100 (refer to drawing 1)] in a slot 22 from across to a mother board 1. subsequently, the daughter board 2 --

engagement -- it is made to rotate toward a member 26 the process of the rotation -- setting -- the latch of a couple -- since the back face 34 of a member 32 is pressed by the daughter board side edge 7 -- the latch of a couple -- elastic deformation of the member 32 is carried out in the direction where an interval in the meantime spreads

[0034] if the end face of a daughter board 2 sits down to a contact terminal 24 -- engagement -- the boss 30 of a member 26 engages with the daughter board opening 5 simultaneous -- a latch -- a member 32 -- an initial configuration -- elastic -- restoring -- the latch of a couple -- the back face 34 of a member 32 pinches a daughter board 2 from a both-sides side by contacting the daughter board side edge 7

[0035] in order to remove a daughter board 2 from a connector 12 on the other hand -- the latch of a couple -- a member 32 is extended in the direction where the interval between them spreads this operation -- a latch -- it is easy by using the handle 38 really fabricated by the member 32 this operation -- a latch -- a stop of the daughter board 2 by the member 32 is canceled And the daughter board 2 by which stop release was carried out is drawn out to the perpendicular upper part until it becomes freedom from a connector 12.

[0036] attachment-and-detachment operation of these daughter boards 2 -- setting -- a latch -- in case a member 32 bends, the bending of too much is regulated with the reinforcement metal plate 50 furthermore, the rib-like height material 42 -- a latch -- bending of a member 32 is resisted therefore, a latch -- damage on a member 32 is prevented and endurance improves

[0037] Drawing 6 or drawing 8 shows the 2nd example of this design. Only the component which is different from the 1st example in this 2nd example is illustrated and explained.

[0038] As shown in drawing 6, the reinforcement metal plate 62 in the 2nd example does not have the U character-like point 58 of the reinforcement metal plate 50 in the 1st example. The maintenance spike 64 of a couple has extended under the flection 56 of this reinforcement metal plate 62. These maintenance spike 64 raises a part of flection 56, and is formed.

[0039] On the other hand, as shown in drawing 7 and drawing 8, it replaces with the engagement projected part 44 of the couple of the 1st example, and mould fabrication of the supporter material 66 of a couple is carried out in one with housing 14 in the daughter board wearing side 18 of housing 14. This supporter material 66 consists of a wall-like portion 68 projected at the edge of housing 14, and a level difference portion 70 slightly made high from the daughter board wearing side 18. The interior of housing 14 is covered from the upper surface, and the slot 72 for making the maintenance spike 64 of the reinforcement metal plate 62 insert is formed in the level difference portion 70.

[0040] In case housing 14 is equipped with the reinforcement metal plate 62, the rib-like member 42 of housing 14 is inserted in the opening 60 of the reinforcement

metal plate 62, and the maintenance spike 64 is inserted in a slot 72, and housing 14 is made to eat. In this state, a part for the point of the flection 56 of the reinforcement metal plate 62 is supported in contact with the wall-like portion 68. Thereby, the reinforcement metal plate 62 is certainly fixed to housing 14.

[0041] The electrical connector of this design is not limited to an above-mentioned example, and various deformation is possible for it. for example, — although the posture of the daughter board 2 with which the electrical connector 1 was equipped was made into the perpendicular posture to the mother board 4 in the example — level **** — being certain — it is — a slanting posture is sufficient

[0042] Moreover, it is good for one electrical connector 1 also as wearing of two or more daughter boards 2 being possible.

[0043]

[Effect of the Device] according to the electrical connector of this design — a latch — since bending of a member is regulated by specification-part material — a latch — the endurance of a member can improve and the powerful pinching force stabilized even if it repeated attachment and detachment of a substrate can be maintained

[0044] Furthermore, since a latch member is the simple structure by which mould fabrication was carried out in one with housing as usual, it can suppress the forming cost of housing.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The electrical connector concerning the 1st example of this design is the perspective diagram which connected the mother board and the daughter board electrically.

[Drawing 2] It is drawing showing the contact terminal in housing, and is an II-II view cross section in drawing 1 .

[Drawing 3] It is the perspective diagram showing the electrical connector before an

assembly.

[Drawing 4] It is the front view of an electrical connector seen from the IV-IV line in drawing 3.

[Drawing 5] It is the perspective diagram showing the reinforcement metal plate in drawing 1.

[Drawing 6] It is the perspective diagram showing the reinforcement metal plate in the 2nd example of this design.

[Drawing 7] It is the perspective diagram showing housing in the 2nd example of this design.

[Drawing 8] It is the front view of housing seen from the VIII-VIII line in drawing 7.

[Description of Notations]

1 -- A mother board (the 1st circuit board), 2 -- Daughter board (the 2nd circuit board), 12 [-- Mother board wearing side (the 1st field),] -- A connector, 14 -- Housing, 16 18 -- A daughter board wearing side (the 2nd field), 22 -- Slot (slot), 24 [-- A latch member, 38 / -- A handle (grasping member) 42 / -- Height material, 44 / -- 50 An engagement projected part (projected part), 62 / -- A reinforcement metal plate / of 58--U characters / (specification-part material)-like point (engagement section), 64 / -- Maintenance spike (leg).] -- A contact terminal, 26 -- An engagement member, 32

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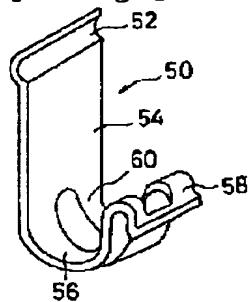
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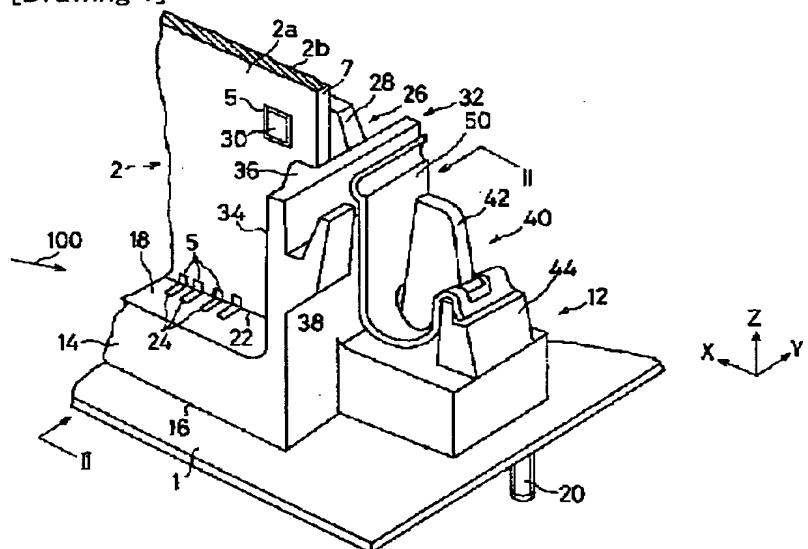
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DRAWINGS

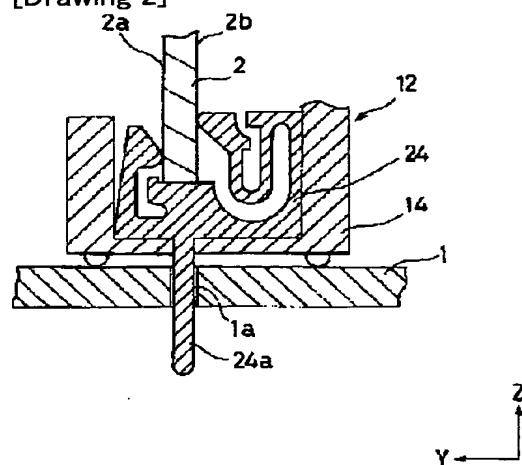
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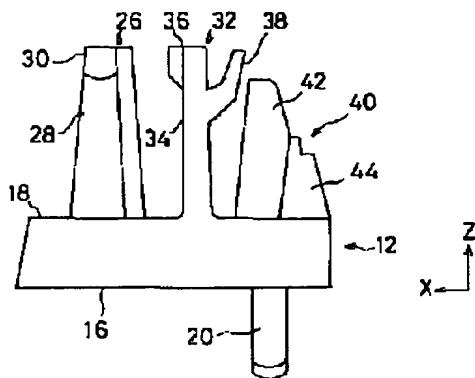
[Drawing 1]



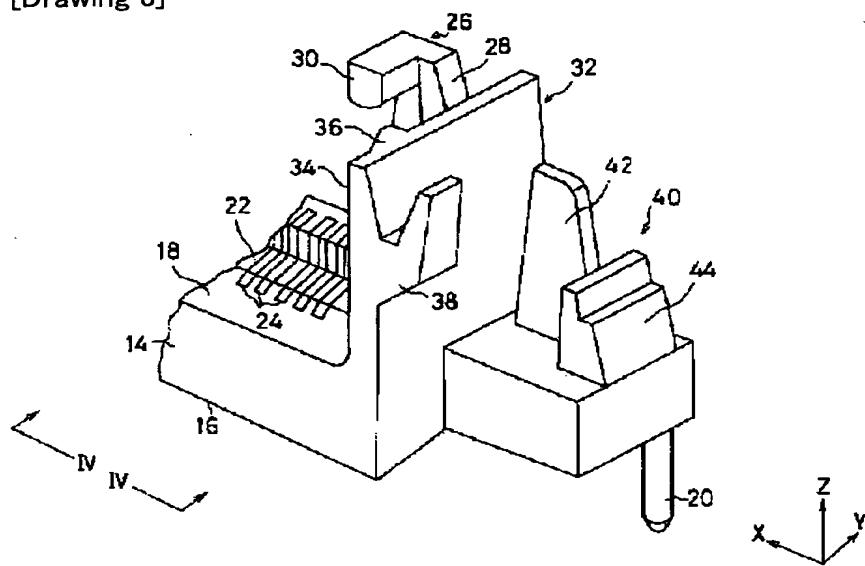
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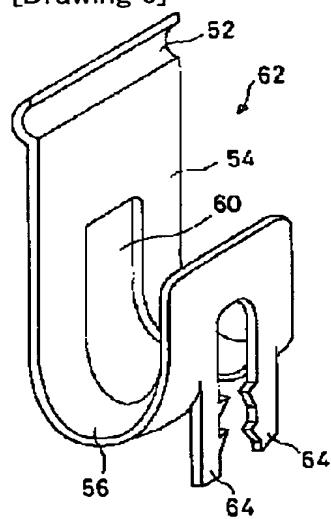
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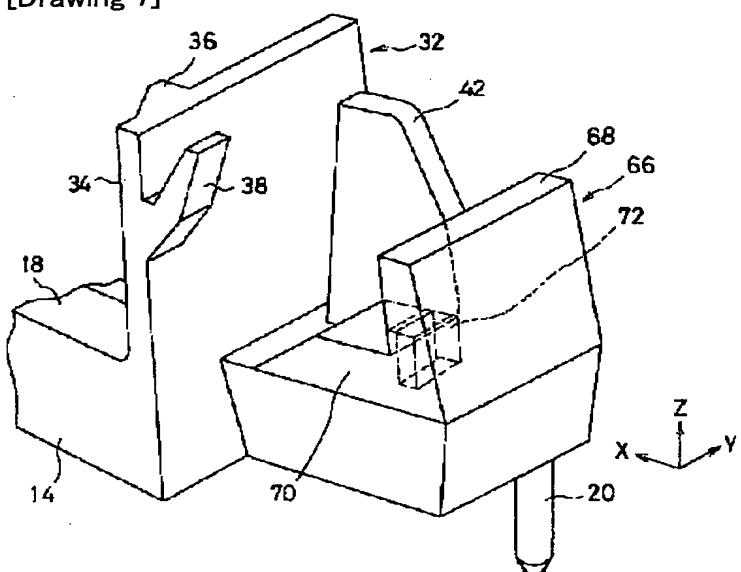
[Drawing 3]



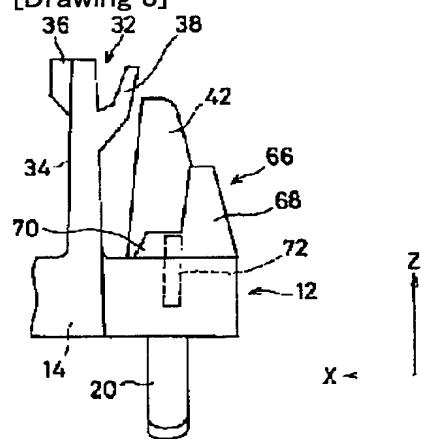
[Drawing 6]



[Drawing 7]



[Drawing 8]



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(56)参考文献 特開 平1-260772 (JP, A)
特開 平3-15180 (JP, A)
実開 平2-117682 (JP, U)

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(54)【考案の名称】 電気コネクタ

1

(57)【実用新案登録請求の範囲】

【請求項1】一枚の第1の回路基板を少なくとも一枚の第2の回路基板に接続するための電気コネクタであって:

弾性絶縁性材料からモールド成形され、第1の回路基板に装着可能な第1の面と第2の回路基板を収容すべき第2の面とを有し、第2の面が第2の回路基板の基端部を収容すべく寸法付けられた少なくとも一つの溝を有するハウジングと;

前記溝に配列され、第1と第2の回路基板を電気的に接続すべき接触端子と;

前記ハウジングと一体的にモールド成形され、且つ前記溝の両端部近傍にて前記第2の面から延出され、第2の回路基板に係合して第2の回路基板を所定姿勢に係止させる少なくとも一对の係合部材と;

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前記ハウジングと一体的にモールド成形され、且つ前記一对の係合部材を挟んで対向して前記第2の面から延出され、前記第2の回路基板をその両側縁から挟持する少なくとも一对のラッチ部材と;

前記ハウジングと一体的にモールド成形され、且つ前記一对のラッチ部材を挟んで対向して前記第2の面から突出され、前記一对のラッチ部材の相互間の間隔が拡がる方向への前記一对のラッチ部材の過大な負荷に対するストッパーとしての役割を果たす少なくとも一对の突起部材と;

前記ハウジングの第2の面に前記一对のラッチ部材を挟んで対向して配置され、その各々が対応する一つの前記ラッチ部材を接触支持すべき一端と、前記ハウジングに固定されるべき他端と、前記一端と他端との間に位置して前記突起部材に係合すべき開口とを有してなり、前記

溝に対する第2の回路基板の装着の際には、前記一对のラッチ部材の相互間の間隔が拡がる方向への前記一对のラッチ部材の撓みを弾性的に規制する少なくとも一对の規制部材と；そして、

前記規制部材の前記他端を前記ハウジングに固定する固定部材と；
を備えており、

前記一对のラッチ部材の相互間の間隔が拡がる方向への前記一对のラッチ部材の撓みは、最初は一对の規制部材により弾性的に規制され、次には一对の突起部材により

ストップされる、

ことを特徴とする電気コネクタ。

【請求項2】前記規制部材が、弾性金属部材である請求項1記載の電気コネクタ。

【請求項3】前記固定部材が、前記ハウジングと一体的にモールド成形され、且つ前記一对の突起部材を挟んで対向して前記第2の面から突出された少なくとも一对の突起部と、前記規制部材の前記他端に形成され、且つ前記突起部に着脱自在に係合する係合部とからなる請求項1記載の電気コネクタ。

【請求項4】前記固定部材が、前記規制部材を前記ハウジングの第2の面に装着すべき脚部であり、この脚部は前記規制部材と一体的に形成されている請求項1記載の電気コネクタ。

【請求項5】前記ラッチ部材が、このラッチ部材を手動で撓めるための把持部材を有する請求項1記載の電気コネクタ。

【考案の詳細な説明】

【0001】

【産業上の利用分野】本考案は、例えばマザーボードにドゥターボードを電気的且つ機械的に接続するための電気コネクタに関する。

【0002】

【従来の技術】例えば、マザーボード(mother board)と称されるメモリー制御ボードと、シングル-インライン-メモリーモジュール(SIMM)等のドゥターボード(daughter board)とを電気的且つ機械的に接続するための様々な電気コネクタが公知である。

【0003】この種の電気コネクタは、マザーボードに装着されるプラスチック性ハウジングを備え、このハウジングは、ドゥターボードの基端を受け入れるスロットを有する。スロット内には、マザーボードとドゥターボードとを電気的に接続する接触端子が配置されている。スロットの両端部には、ドゥターボードを挟持するためのラッチ部材が配置されている。

【0004】スロットに挿入されたドゥターボードは、一对のラッチ部材の間へ回動される。その過程においては、ラッチ部材はドゥターボードの側縁により押圧されて弾性的に撓められる。次いで、ドゥターボードが所定の姿勢に達すると、一对のラッチ部材は初期形状へ弾性

的に復帰してドゥターボードを挟持する。これにより、ドゥターボードが所定姿勢に係止される。このようなラッチ部材は、一般にハウジングと一体的にモールド成形されている。

【0005】代替的に、米国特許4,986,765号に開示された電気コネクタは、金属性ラッチ部材を有している。この金属性ラッチ部材は、ハウジングの両端部に一体的にモールド成形された箱状部材内に挿入されることにより、ハウジングに保持される。

【0006】

【考案が解決しようとする課題】プラスチック性ラッチ部材は、その材質が柔軟であるために撓め易い。この性質は、ドゥターボードの着脱操作が容易という利点である一方、負荷に対する耐久性が不充分という欠点もある。従って、ドゥターボードの着脱を多数回繰返すと、ラッチ部材が弾性変形限界を越えて撓むこと、及び材料疲労に起因して、ラッチ部材が初期形状に復元しにくくなる。その結果、ドゥターボードを挟持する力が低下し、ドゥターボードと接触端子との電気的接触の不良を招き易い。また、場合によっては、ひび割れ、欠け、折れ等により、ラッチ部材が破損または破断することもある。

【0007】一方、金属製ラッチ部材は、その材質が強固であるために、耐久性に優れるものの、ドゥターボードの着脱操作に強い力が要求されるので操作性が劣る。

【0008】従って、本考案の目的は、耐久性及び操作性に優れたラッチ部材を有する電気ソケットを提供することである。

【0009】

【課題を解決するための手段】本考案は：一枚の第1の回路基板を少なくとも一枚の第2の回路基板に接続するための電気コネクタであって；弹性絶縁性材料からモールド成形され、第1の回路基板に装着可能な第1の面と第2の回路基板を収容すべき第2の面とを有し、第2の面が第2の回路基板の基端部を収容すべく寸法付けられた少なくとも一つの溝を有するハウジングと；前記溝に配列され、第1と第2の回路基板を電気的に接続すべき接触端子と；前記ハウジングと一体的にモールド成形され、且つ前記溝の両端部近傍にて前記第2の面から延出され、第2の回路基板に係合して第2の回路基板を所定姿勢に係止させる少なくとも一对の係合部材と；前記ハウジングと一体的にモールド成形され、且つ前記一对のラッチ部材を挟んで対向して前記第2の面から延出され、前記第2の回路基板をその両側縁から挟持する少なくとも一对のラッチ部材と；前記ハウジングと一体的にモールド成形され、且つ前記一对のラッチ部材を挟んで対向して前記第2の面から突出され、前記一对のラッチ部材の相互間の間隔が拡がる方向への前記一对のラッチ部材の過大な負荷に対するストッパーとしての役割を果たす少なくとも一对の突起部材と；前記ハウジングの第2の

面に前記一对のラッチ部材を挟んで対向して配置され、その各々が対応する一つの前記ラッチ部材を接触支持すべき一端と、前記ハウジングに固定されるべき他端と、前記一端と他端との間に位置して前記突起部材に係合すべき開口とを有してなり、前記溝に対する第2の回路基板の装着の際には、前記一对のラッチ部材の相互間の間隔が拡がる方向への前記一对のラッチ部材の撓みを弾性的に規制する少なくとも一対の規制部材と；そして、前記規制部材の前記他端を前記ハウジングに固定する固定部材と；を備えており、前記一对のラッチ部材の相互間の間隔が拡がる方向への前記一对のラッチ部材の撓みは、最初は一対の規制部材により弾性的に規制され、次には一対の突起部材によりストップされる、ことを特徴とすることにより、上記目的を達成したものである。

【0010】前記規制部材は、好ましくは弾性金属部材である。

【0011】本考案の一実施例によれば、前記固定部材は、前記ハウジングと一体的にモールド成形され、且つ前記一对の突起部材を挟んで対向して前記第2の面から突出された少なくとも一対の突部と、前記規制部材の前記他端に形成され、且つ前記突部に着脱自在に係合する係合部とからなる。

【0012】本考案の一実施例によれば、前記固定部材は、前記規制部材を前記ハウジングの第2の面に装着すべき脚部であり、この脚部は前記規制部材と一体的に形成されている。

【0013】前記ラッチ部材は、このラッチ部材を手動で撓めるための把持部材を有することが好ましい。

【0014】

【作用】本考案の電気コネクタによれば、規制部材がラッチ部材を補強する役割を果たし、ラッチ部材の破損を防止する。

【0015】ラッチ部材は、ハウジングと同様に絶縁樹脂からモールド成形されているため、ラッチ部材を撓め易く、第2の回路基板の着脱操作が容易である。

【0016】

【実施例】図1を参照すると、本考案に係る電気コネクタ12が組み立て後の状態で示されている。この電気コネクタ12は実質的に左右対称であり、図においては右端部分のみ示されている。

【0017】電気コネクタ12は、マザーボード(mother board)1をドゥターボード(daughter board)2へ機械的に且つ電気的に接続する。マザーボード1は例えばメモリー制御ボードである。ドゥターボード2は例えばメモリーチップ(図示せず)が装着されたシングルーアインライナーメモリーモジュール(SIMM)である。ドゥターボード2は、その幅方向の両端部に開口3を有する。ドゥターボード2の基端部には、複数の半田パッド5が配列されている。符号2a, 2bはそれぞれドゥターボード2の表面、裏面を示す。

【0018】コネクタ12は、弾性絶縁性材料、例えばプラスチックからモールド成形された細長いハウジング14を有する。以下の説明では、ハウジング14の長手方向及びドゥターボード2の幅方向をX方向、ハウジング14の横断方向をY方向、ハウジング14の高さ方向をZ方向とする。

【0019】ハウジング14の下面16はマザーボード1に装着されるべき面であり、上面18はドゥターボード2が装着されるべき面である。

【0020】ハウジング14のマザーボード装着面16のX方向両端部には脚20が設けられている。この脚20がマザーボード1に挿通され、半田付け等による電気的接続が可能なように固定されることにより、コネクタ12がマザーボード1に装着される。

【0021】ハウジング14のドゥターボード装着面18には、X方向に沿ってスロット22が形成されている。スロット22には複数の接触端子24がX方向に沿って列状に配置されている。

【0022】接触端子24は、例えばSIMM用の公知の弾性接触端子から任意に選択することができる。例えば図2に示すような断面形状の接触端子24を使用できる。このような接触端子24は、その一端部24aをマザーボード1のスルーホール1aに挿入するなどの任意の方法により、マザーボード1に電気的に接続される。

【0023】特に図3及び図4に示すように、ドゥターボード装着面18におけるスロット22の両端部には、それぞれ係合部材26が上方へ向かって延出されている。この係合部材26は、ポスト28及びその上端のボス30とからなる。ボス30は、ドゥターボード2の裏面からドゥターボード開口5に係合する。

【0024】ドゥターボード装着面18には、一对の係合部材26を挟んで一对の壁状のラッチ部材32が延出されている。一对のラッチ部材32は、ドゥターボード側縁面7を支持すべき支持面34を有する。この支持面34の上端には、ドゥターボード表面2aの側縁近傍を支持すべき支持突起36が突出されている。このようなラッチ部材32はX方向へ弾性的に変形可能である。

【0025】これら係合部材30、ラッチ部材32は、ハウジング14と一体的にモールド成形されている。

【0026】ラッチ部材32の初期形状においては、ドゥターボード2を両側縁7から弾性的に挟持できるように、一对の支持面34間の間隔がドゥターボード2のX方向幅よりも僅かに小さくされている。また、ラッチ部材32は、ドゥターボード2の挟持を手動で解除するためのハンドル38を有することが好ましい。

【0027】ドゥターボード装着面18には、一对のラッチ部材32を挟んで一对の取り付け部材40が突出されている。取り付け部材40は、後述の補強金属板50をハウジングに取り付けるためのものである。各取り付け部材40は、リブ状突起部材42と台状の係合突部4

4 とからなる。

【0028】特に図5に示すように、補強金属板50は、一枚の弾性金属板を折り曲げ及び打ち抜き加工して形成された簡単な構造である。補強金属板50は、平板部54と屈曲部56とからなる実質的に断面J字状である。但し、屈曲部56の先端部58は断面逆U字状に折り曲げられている。また、平板部54の上端52は、その縁がラッチ部材32を傷付けることがないように、図示のように丸め加工することが望ましい。補強金属板50は、平板部52の基端から屈曲部54の先端58近傍に亘って打ち抜かれた開口部60を有する。

【0029】電気コネクタ12の組み立ての際には、補強金属板50の開口部60にリブ状突起部材42を挿通させることにより、補強金属板50をハウジング14に仮止めすることができる。従って、電気コネクタ12の組み立て作業が容易になる。補強金属板50をハウジング14に仮止めした状態で、補強金属板50のU字状先端部58を取り付け部材40の係合突部44に係合させることにより、補強金属板50をハウジング14に着脱自在に固定することができる。この場合、図1に示すように、補強金属板50の平板部52の背面とラッチ部材32の背面とを互いに接触させることにより、補強金属板50にラッチ部材32を支持させる。

【0030】ラッチ部材32を押し抜げる際には、ラッチ部材32の過度な撓みが補強金属板50の弾性により規制され、ラッチ部材32の破損が防止される。

【0031】補強金属板50は、単にラッチ部材32の撓みを規制するものであり、米国特許4,986,765号に開示された金属性ラッチ部材のようにドゥターボード2に挟持力を付加するものではない。従って、ドゥターボード2の着脱操作に必要な力が小さくてすむ。

【0032】また、リブ状突起部材42は、ラッチ部材32に加わる過大な負荷に対するストッパーとしての役割も果たす。これによりラッチ部材32の破損防止が一層に確実になる。

【0033】上記のような電気コネクタ12にドゥターボード2を装着する際には、ドゥターボード2の基端をマザーボード1に対し斜め方向100(図1参照)からスロット22に挿入する。次いでドゥターボード2を係合部材26へ向かって回動させる。その回動の過程においては、一对のラッチ部材32の支持面34がドゥターボード側縁7により押圧されるので、一对のラッチ部材32は、その間の間隔が拡がる方向へ弾性変形される。

【0034】ドゥターボード2の基端が接触端子24に着座すると、係合部材26のボス30がドゥターボード開口5に係合する。同時に、ラッチ部材32が初期形状に弾性的に復元し、一对のラッチ部材32の支持面34は、ドゥターボード側縁7に当接することにより、ドゥターボード2を両側面から挟持する。

【0035】一方、ドゥターボード2をコネクタ12か

ら取り外すためには、一对のラッチ部材32を、それらの間の間隔が拡がる方向へ押し拡げる。この操作は、ラッチ部材32に一体成形されたハンドル38を用いることにより容易である。この操作により、ラッチ部材32によるドゥターボード2の係止が解除される。そして、係止解除されたドゥターボード2をコネクタ12から自由になるまで垂直上方へ引き抜く。

【0036】これらドゥターボード2の着脱操作において、ラッチ部材32が撓む際は、その過度な撓みが補強金属板50により規制される。更に、リブ状突起部材42もラッチ部材32の撓みに抗する。従って、ラッチ部材32の損傷が防止され、耐久性が向上する。

【0037】図6乃至図8は本考案の第2実施例を示す。この第2実施例においては第1実施例と相違する構成要素についてのみ図示及び説明する。

【0038】図6に示すように、第2実施例における補強金属板62は、第1実施例における補強金属板50のU字状先端部58を有していない。この補強金属板62の屈曲部56の下方には、一对の保持スパイク64が延出されている。これら保持スパイク64は、屈曲部56の一部を切り起として形成されている。

【0039】一方、図7及び図8に示すように、ハウジング14のドゥターボード装着面18には、第1実施例の一对の係合突部44に代えて、一对の支持部材66がハウジング14と一体的にモールド成形されている。この支持部材66は、ハウジング14の端部に突出された壁状部分68と、ドゥターボード装着面18から僅かに高くされた段差部分70とからなる。段差部分70には、その上面からハウジング14の内部へ亘って、補強金属板62の保持スパイク64を挿入させるためのスロット72が形成されている。

【0040】補強金属板62をハウジング14に装着する際には、補強金属板62の開口部60にハウジング14のリブ状部材42を挿通し、且つ保持スパイク64をスロット72へ挿入してハウジング14に嵌り込ませる。この状態では、補強金属板62の屈曲部56の先端部分は壁状部分68に当接して支持される。これにより、補強金属板62がハウジング14に確実に固定される。

【0041】本考案の電気コネクタは上述の実施例に限定されるものではなく、種々の変形が可能である。例えば、電気コネクタ1に装着されたドゥターボード2の姿勢は、実施例ではマザーボード4に対して垂直な姿勢としたが、水平姿勢あるいは斜め姿勢でもよい。

【0042】また、一つの電気コネクタ1に複数のドゥターボード2を装着可能としてもよい。

【0043】

【考案の効果】本考案の電気コネクタによれば、ラッチ部材の撓みが規制部材により規制されるので、ラッチ部材の耐久性が向上し、基板の着脱を繰り返しても安定し

た強力な挟持力を維持することができる。

【0044】更に、ラッチ部材は従来と同様にハウジングと一体的にモールド成形された単純な構造であるため、ハウジングの成形コストを抑制できる。

【図面の簡単な説明】

【図1】本考案の第1実施例に係る電気コネクタがマザーボードとドゥターボードとを電気的に接続した斜視図である。

【図2】ハウジング内の接触端子を示す図であって、図1におけるII-II矢印断面図である。

【図3】組み立て前の電気コネクタを示す斜視図である。

【図4】図3におけるIV-IV線方向から見た電気コネクタの正面図である。

【図5】図1における補強金属板を示す斜視図である。

【図6】本考案の第2実施例における補強金属板を示す*

* 斜視図である。

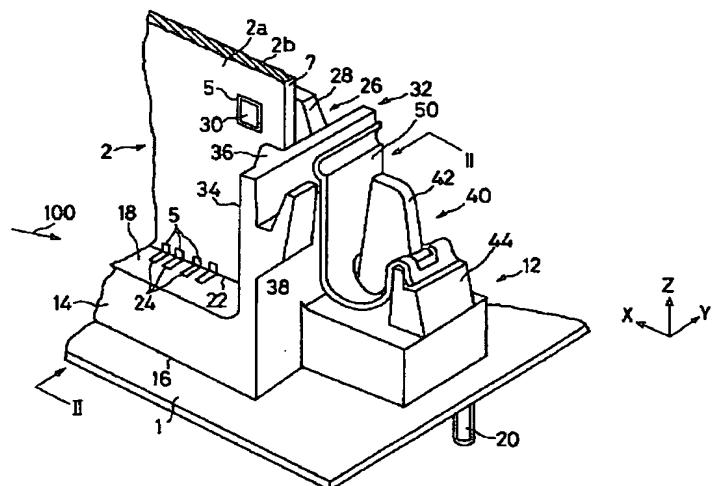
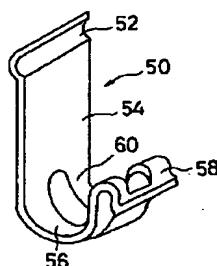
【図7】本考案の第2実施例におけるハウジングを示す斜視図である。

【図8】図7におけるVIII-VIII線方向から見たハウジングの正面図である。

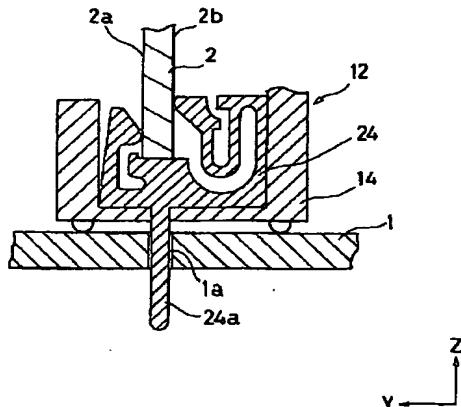
【符号の説明】

1…マザーボード（第1の回路基板）、2…ドゥターボード（第2の回路基板）、12…コネクタ、14…ハウジング、16…マザーボード装着面（第1の面）、18…ドゥターボード装着面（第2の面）、22…スロット（溝）、24…接触端子、26…係合部材、32…ラッチ部材、38…ハンドル（把持部材）、42…突起部材、44…係合突部（突部）、50, 62…補強金属板（規制部材）58…U字状先端部（係合部）、64…保持スパイク（脚部）。

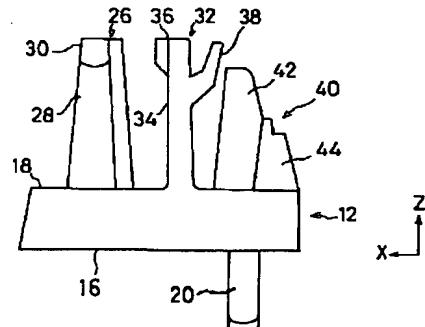
【図5】



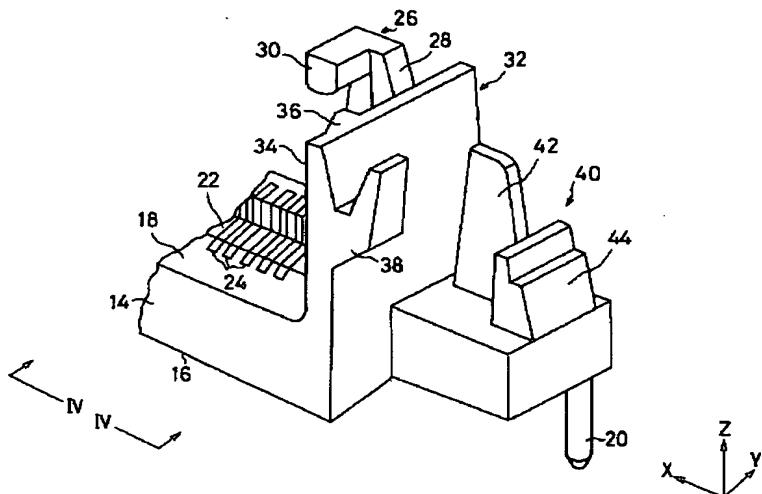
【図2】



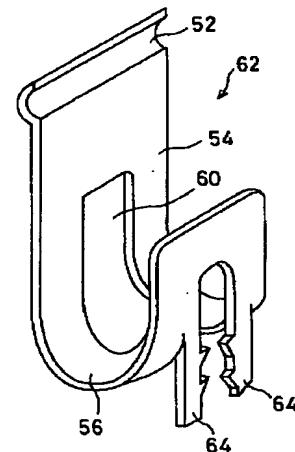
【図4】



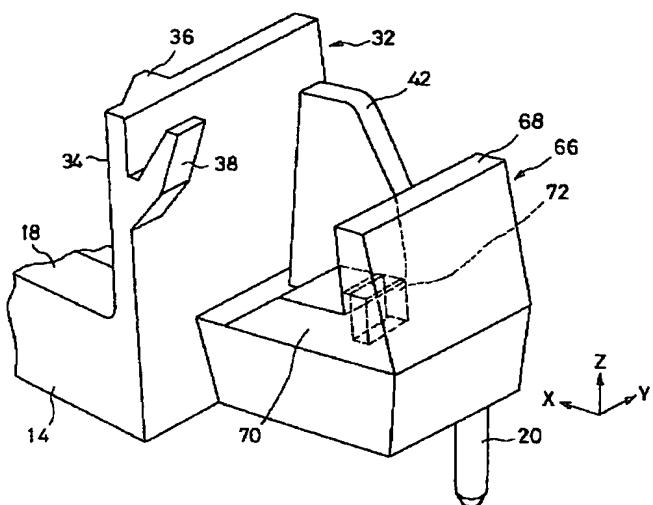
【図3】



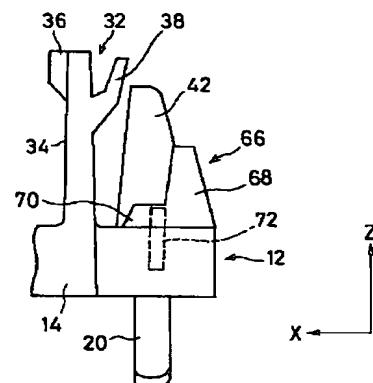
【図6】



【図7】



【図8】



フロントページの続き

(58)調査した分野(Int.CI.°, D B名)
H01R 23/00 - 23/68